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Title: COMMUNICATION APPARATUS AND RECEPTION NOTIFYING METHOD

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APPLICATION ELEMENTS	ACCOMPANYING APPLICATION PARTS
1. ☒ Fee Transmittal Form	8. ☒ Assignment Papers (cover sheet & document(s))
2. ☒ Specification [Total Pages 35] (preferred arrangement set forth below) - Descriptive title of the Invention - Cross References to Related Applications - Statement Regarding Fed sponsored R & D - Reference to Microfiche Appendix - Background of the Invention - Brief Summary of the Invention - Brief Description of the Drawings (if filed) - Detailed Description - Claim(s) - Abstract of the Disclosure	9. ☐ 37 CFR 3.73(b) Statement (when there is an assignee) ☐ Power of Attorney
	10. ☐ English Translation Document (if applicable)
	11. ☐ Information Disclosure Statement (IDS)/PTO-1449 ☐ Copies of IDS Citations
	12. ☐ Preliminary Amendment
3. ☒ Drawing(s) (35 USC 113) [Total Sheets 11]	13. ☒ Return Receipt Postcard (MPEP 503) (Should be specifically itemized)
4. ☒ Oath or Declaration [Total Pages 3] a. ☒ Newly executed (original or copy) ☐ Unexecuted b. ☐ Copy from a prior application (37 CFR 1.63(d)) (for continuation/divisional with Box 18 completed) **[Note Box 5 below]** i. ☐ DELETION OF INVENTOR(S) Signed statement attached deleting inventor(s) named in the prior application, see 37 CFR 1.63(d)(2) and 1.33(b).	14. ☐ Small Entity Statement(s) ☐ Statement filed in prior application, Status still proper and desired
	15. ☐ The prior application is assigned of record to _____.
	16. ☒ Foreign priority claimed a. ☒ Claim of Priority b. ☒ Certified Copy of Priority Document(s)
5. ☐ Incorporation By Reference (useable if Box 4b is checked) The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied under Box 4b, is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein.	17. ☐ Other: _____
6. ☐ Microfiche Computer Program (Appendix)	
7. Nucleotide and/or Amino Acid Sequence Submission (if applicable, all necessary) a. ☐ Computer Readable Copy b. ☐ Paper Copy (identical to computer copy) c. ☐ Statement verifying identity of above copies	

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SPECIFICATION

Title of the Invention :

COMMUNICATION APPARATUS AND
RECEPTION NOTIFYING METHOD

Inventor :

Yutaka IYOKI

COMMUNICATION APPARATUS AND RECEPTION NOTIFYING METHOD

BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates to a communication apparatus and a reception notifying method, and particularly to sending notification of reception of image information to an outer terminal in an IFAX apparatus.

Description of the Related Art

Conventionally, as disclosed in USP 5,881,233, there is proposed an Internet facsimile apparatus (hereinafter referred to as IFAX) which receives e-mail and prints it.

This IFAX gains access to a mail server periodically and receives e-mail, and automatically prints the content of the received e-mail by a printer. A user watches printed materials discharged to a paper-charging tray, and knows the arrival of data.

However, it is general that IFAX is shared by a plurality of users in an office, etc. For this reason, IFAX is not always set up at a site nearby all users. For example, if IFAX is set up at a different room or on a different floor, the user must go to the location where IFAX is set up to check whether e-mail is arrived to the user or ask the other person to check the e-mail.

In order to solve such inconvenience, it is

considered that IFAX transmits e-mail, which informs that e-mail to the user is received, to a mail address, which the user normally employs on PC. However, in order to read this e-mail, it is necessary to access to a mail sever by a mailer executed on PC. For this reason, It has not been realized that the user is notified of e-mail arrival at IFAX in real time.

Such a problem is not limited to IFAX, and this similarly occurs in a case in which FAX data is received in image multi-function system, which is connected to LAN and which mounts a facsimile communication function thereon.

SUMMARY OF THE INVENTION

It is an object of the present invention is to provide a communication apparatus, which is capable of notifying an outer terminal of data reception in substantially real time, and to provide a reception notifying method.

The communication apparatus of the present invention publishes a hypertext, which has an applet embedded therein, to an outer terminal, performs communications with the applet executed by a browser on the outer terminal to which the hypertext is opened and transmits reception notification to the outer terminal when detecting reception of information so that notification of reception is performed at the outer terminal by the applet.

This makes it possible to notify the reception of information obtained by the communication apparatus at the outer terminal without installing software dedicated to the outer terminal.

BRIEF DESCRIPTION OF THE INVENTION

The above and other objects and features of the invention will appear more fully hereinafter from a consideration of the following description taken in connection with the accompanying drawing wherein one example is illustrated by way of example, in which;

FIG. 1 is a conceptual view showing a network through which a multi-function system according to one embodiment of the present invention operates;

FIG. 2 is a hardware view showing the multi-function system according to the embodiment of the present invention;

FIG. 3 is a block diagram showing the functions of the multi-function system according to the embodiment of the present invention;

FIG. 4 is a block diagram showing the function of an IFAX processing section of the multi-function system according to the embodiment of the present invention;

FIG. 5 is a block diagram explaining functions of a WWW server section and a reception notify processing section of the multi-function system according to the embodiment of the present invention;

FIG. 6 is a flowchart showing a reception list generating operation of the multi-function system according to the embodiment of the present invention;

FIG. 7 is a sequence view showing a procedure of communications between the multi-function system according to the embodiment of the present invention and PC;

FIG. 8 is a flowchart showing the respective steps of reception notify processing of the multi-function system according to the embodiment of the present invention;

FIG. 9 is a flowchart sowing the respective steps of an applet operation according to the embodiment of the present invention;

FIG. 10 is a view showing a reception notify window according to the embodiment of the present invention;

FIG. 11 is a view showing an option setting window according to the embodiment of the present invention; and

FIG. 12 is a view showing an option setting window according to the embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The following will specifically explain embodiments of the present invention with reference to the drawings accompanying herewith.

FIG. 1 is a conceptual view showing a network

through which a multi-function system according to one embodiment of the present invention operates.

Multi-function system 1 is connected to LAN 2 and shared among PCs 3 to 5 connected to the same LAN 2. LAN 2 is constructed by, for example, Ethernet. Print data is transmitted to multi-function system 1 by PCs 3 to 5 through this LAN 2, and printed by multi-function system 1. Also, multi-function system 1 transmits an image, which is obtained by scanning an original, to PCs 3 to 5. Multi-function system 1 further transmits facsimile data received through PSNT 6 to PCs 3 to 5. On the contrary, facsimile data is transmitted from PCs 3 to 5 to multi-function system 1, and this facsimile data is transmitted from multi-function system 1 to PSTN 6.

Moreover, multi-function system 1 has an Internet facsimile function. Multi-function system 1 appends an image, which is obtained by scanning the original, to e-mail. Also, multi-function system 1 converts FAX data received through PSTN 6 to e-mail format. Multi-function system 1 sends these e-mail to Internet 7. It is of course that these e-mail are transmittable to PCs 3 to 5 through LAN 2.

Further, multi-function system 1 can receive e-mail and Internet facsimile mail (hereinafter referred to as I-FAX mail) through LAN 2 and Internet 7. Multi-function system 1 prints text data of a text part of received e-mail and I-FAX mail, and the image appended

to the text part. Multi-function system 1 converts the received e-mail to a format of facsimile data, allowing the converted data to be transmitted to the other facsimile apparatus.

This embodiment relates to the point in which each PC in the aforementioned network is informed of the reception of each of facsimile, e-mail, I-FAX mail in multi-function system 1.

It should be noted that the Multi-Function System is called Printer Copier, Fax Copier, Multi Function System, Multi-Function Station, etc., and it comprises any two or more of image processing functions such as a printer, a scanner, a copy machine, and a facsimile apparatus.

FIG. 2 is a hardware block view showing the multi-function system 1 according to the first embodiment of the present invention. CPU 11 executes a program multi-function system 1 and controls the entirety of the apparatus. ROM 12 stores the program, which is executed by CPU 11.

RAM 13 has a work area where the program is executed, and a buffer area where various kinds of data such as e-mail, image files, etc. are temporarily stored.

Auxiliary storage apparatus 14 stores an HTML file group.

FAX and voice processing section 15 is connected to PSTN 6, and executes a facsimile reception, a facsimile

transmission, and a call. FAX and voice processing section 15 modulates facsimile data and a voice, and outputs modulated data to PSTN 6, and demodulates modulated data, which has been received from PSTN 6, to facsimile data and voice data.

Scanner 16 scans an original, and obtains image data. Printer 17 prints various kinds of data including received image data.

LAN interface 18 is connected to LAN 2, and executes procedures, which are necessary for receiving and transmitting data on LAN 2.

Panel controller 19 has dial keys and a touch panel, and receives operator's operations such as a specification of destination, an instruction of transmission start, etc.

Each of CPU 11, ROM 12, RAM 13, auxiliary storage apparatus 14, FAX and voice processing section 15, scanner 16 printer 17, LAN interface 18, panel controller 19 is internally connected to bus 20. As a result, the respective sections are integrated to IFAX1.

ROM 12 stores a program, and CPU 11 executes the program. Functions resultantly constructed will be explained as follows. FIG. 3 is a block diagram showing the functions of the multi-function system according to the first embodiment.

Multi-function system 1 comprises FAX and voice processing section 100, scanner control section 200, and

printer control section 300, and controls the respective processing sections of FAX and voice processing section 15, scanner 16 and printer 17.

Multi-function system 1 also comprises an IFAX processing section 400. This IFAX processing section 400 receives and transmits e-mail using LAN interface 18 through LAN 2. Namely, IFAX processing section 400 receives the e-mail from a sender, and prints received data using printer 17. At this time, if an image file is appended to the e-mail, the content of the image file is printed by printer 17. While, IFAX processing section 400 converts imaged data obtained by scanner 16 to e-mail and transmits it.

FIG. 4 is a block diagram showing the function of IFAX processing section 400. Scanner control section 200 sends raw image data (for example, bit map data), which is scanned by scanner 16, to IFAX processing section 400. In IFAX processing section 400, compression and decompression section 401 compresses row image data by compression method such as MH, and obtains compression files. The compression is carried out by one page of original. These compression files are converted to one TIFF (Tag Image File Format) file. This TIFF file is appended to a multi-part mail in accordance with, for example, MIME (Multipurpose Internet Mail Extension), so that I-FAX mail is generated. Also, mail address of this I-FAX mail, which is input by panel controller 19,

is specified to address [To:].

The generated I-FAX mail is transmitted to the mail server by mail transmitting section 404 through LAN interface 18 in accordance with SMTP (Simple Mail Transfer Protocol).

While, in IFAX processing section 400, when mail receiving section 405 receives I-FAX mail through LAN Interface 18, binary converting section 406 converts appended data included in I-FAX mail to binary data from a text code so as to obtain a TIFF file. TIFF decompression section 407 decompresses the obtained ITFF file so as to obtain a compression file. Compression and decompression section 401 decompresses this compression file so as to obtain row image data. This image data is printed by printer 17.

Also, multi-function system 1 comprises WWW server section 500. This WWW server section 500 publishes a WWW page to PCs 3 to 5 through LAN 2. Moreover, multi-function system 1 comprises reception notify processing section 600. This reception notify processing section 600 notifies PCs 3 to 5 of the reception of FAX, e-mail, and I-FAX mail.

FIG. 5 is a function block diagram showing the WWW server section and reception notify processing section in the multi-function system according to the embodiment of the present invention.

WWW server section 500 comprises server CGI

function section 501, an application section 502, and file managing section 503.

Server CGI function section 501 transfers an HTML file to Java acceptable browser 701, which operates mainly on PCs 3 to 5, and provides CGI (Common Gateway Interface) function, which meditates between Java acceptable browser 701 and an application. CGI is an interface that performs processing in which the server starts another program in response to request from the WWW browser so as to return the result to the WWW server.

In this server CGI function section 501, HTTP communication section 510 communicates with browser module 702 of Java acceptable browser 701 in accordance with HTTP (Hyper Transfer Protocol). Data received from the browser module by HTTP communication section 510 is analyzed by CGI string analyze section 511.

CGI string analyze section 511 sends received data to CGI appl determine section 512 when detecting a character string of CGI processing from received data. CGI appli determine section 512 activates a CGI application in accordance with the character string in received data. The CGI application decodes received data, which is encoded in URL, and executes predetermined processing. The CGI application includes HTML document edit CGI application 513, which edits HTML document, address notebook CGI application 514, which generates an address notebook, and transmission CGI application

515.

While, file transmitting section 516 receives a file in which a file request is output from browser module 702, and sends it to HTTP communication section 510.

Application section 502 includes reception list generate section 521, communication result list generate section 522, and address notebook generate section 523. Reception generate section 521 is an application that generates HIML file (hereinafter referred to as reception list html) 531 for list displaying received facsimile data, e-mail, and I-FAX mail. This reception list generate section 521 receives reception facsimile data from FAX and voice processing section 100 and also receives e-mail and I-FAX mail from IFAX processing section 400, and generates reception list html. Also, reception list generate section 521 performs editing such as deletion, rewrite, move, etc., with respect to reception list html by a command given from HTML document edit CGI application 514 and reception data.

Next, communication result list generate section 522 receives log information, which shows a communication result, from FAX and voice processing section 100 and IFAX processing section 400 and generates and updates HTML file (hereinafter referred to as communication result html), which displays a communication result list.

Also, address notebook generate section 523

generates and updates HTML file (hereinafter referred to as html) 533, which displays an address notebook by a command from address notebook CGI application 514 and reception data.

File managing section 503 manages HTML file stored in auxiliary storage apparatus 14, TIFF file, etc. Auxiliary storage apparatus 14 stores TIFF files 534, HOMEhtm 1535 and applet class file 536 in addition to reception list htm 1531, communication result 1532 and address notebook htm 1533.

TIFF files 534 includes TIFF file, which is obtained when facsimile data received by FAX and voice processing section 100 is converted by MH-TIFF converting section 541, and TIFF file appended to I-FAX mail received by IFAX processing section 400.

HOMEhtm 1534 is HTML file, which is opened when Java acceptable browser 701 gains first access to WWW server section 500. Applet class file 536 is transferred to Java acceptable browser 701 together with this HOMEhtm 1534.

While, reception notify processing section 600 has TCP/IP processing section 601. TCP/IP processing section 601 opens TCP socket 607 and communicates with applet 703, which is executed by Java acceptable browser 701, in accordance with TCP/IP protocol. A message received by this TCP/IP processing section 601 is sent to connection request detecting section 602 for

detecting a connection request from applet 703, arrive notify detecting section 603 for detecting arrive notification from applet 703, and end notification detecting section 604 for detecting end notification from applet 703.

Also, reception notify processing section 600 has reception notify transmitting section 605.

Reception detecting section 606 is connected to this reception notify transmitting section 605. This reception detecting section 606 monitors FAX and voice processing section 100 and IFAX processing section 400, and detects the reception of facsimile data, e-mail, and I-FAX processing section 400.

Next, an operation of the above-configured multi-function system according to the above-mentioned embodiment will be explained. FIG. 6 is a flowchart showing an operation of reception list generation in the multi-function system according to the above embodiment.

When data reception occurs, it is determined whether or not the reception form is a telephone line or Internet (ST601). It is determined that a case in which IFAX processing section 400 receives e-mail or I-FAX mail is a reception from Internet. In this case, if IFAX processing section 400 receives e-mail (ST602) and appended data is TIFF file, a file name, for example, "mail0001.tif" is added thereto, and the TIFF file is stored in TIFF files 534 of auxiliary storage apparatus

14 (ST603).

While, it is determined that a case in which FAX and voice processing section 100 receives facsimile data is a reception from the telephone line. In the case of the reception from the telephone line, FAX and voice processing section 100 receives facsimile data (ST604), and received facsimile data (MH file) is converted to TIFF file by MH-TIFF converting section 541 (ST605). A file name (for example, "FAX000.1.tif") is added to this TIFF file, and stored in TIFF files 534 (ST603). Thereafter, since reception list generate section 521 adds the file name to the reception list, reception list HTML is updated (ST606).

Next, communications between multi-function system 1 and PCs 3 to 5 will be explained. FIG. 7 is a sequence view showing procedures of communications between multi-function system 1 according to the above embodiment and PCs.

Browser module 702 of Java acceptable browser 701 executed by PCs 3 to 5 gains access to the WWW server started by the multi-function system 1, and requests WWW server section 500 to transfer HOMEhtml.

File transmitting section 516 of WWW server section 500 detects this request, and requests HOMEhtml of the file managing section 503. File managing section 503 sends HOMEhtml 535 stored in auxiliary storage apparatus 14 to file transmitting section 516. File transmitting

section 516 instructs HTTP communication section 510 to transmit HOMEhtml 535 to browser module 702. Browser module 702 displays HOMEhtml on the screens of PCs 3 to 5.

In this HOMEhtml, a link is pasted to applet class file 536 stored in auxiliary storage apparatus 14. Browser module 702 reads applet class file 536 to which the link is pasted simultaneously when reading the Homehtml. Java acceptable browser 701 opens applet class file 536 so as to operate applet 703. Applet 603 is thus embedded in the Homehtml.

While, HTTP communication section 510 of multi-function system 1 opens an ephemeral port, and waits for a connection request from applet 703. Applet 703 of PCs 3 to 5 transmits the connection request to the ephemeral port. In the multi-function system 1, connection detecting section 602 detects the connection request. Thereafter, TCP socket 607 is opened therebetween.

When TCP socket 607 is opened, reception detecting section 606 starts to detect data reception at FAX and voice processing section 100 and IFAX processing section 400. When reception detecting section 606 detects the reception of data, a reception notification is transmitted to applet 703. Applet 703 displays a window showing the reception notification when receiving this reception notification.

Also, applet 703 transmits an arrive notification

to TCP/IP processing section 601 periodically. In multi-function system 1, arrive notify detecting section 603 detects an arrive notification to continue the connection between multi-function system 1 and applet 703.

When applet 703 is in an end state, applet 703 transmits an end notification to multi-function system 1. In multi-function system 1, end notification detecting section 604 detects the end notification. Thereafter, TCP socket 607 is closed.

Next, an operation of multi-function system 1 will be explained. FIG. 8 is a flowchart showing the respective steps of reception notify processing of the multi-function system according to the embodiment of the present invention.

Multi-function system 1 is activated to start the WWW server by WWW server section 500 (ST801). Thereafter, TCP/IP processing section 601 opens the ephemeral port, and waits for the connection request from PCs 3 to 5 (ST 802).

Multi-function system 1 resets a timeout counter when receiving the connection request (ST803). Next, it is determined whether or not the timeout counter is a timeout value (ST804). If the timeout counter is not the timeout value, the multi-function system 1 is set to be in a waiting state of a message reception from applet 703 (ST805).

Multi-function system 1 determines whether or not the message is received within one second (ST806). If no message is received within one second, the timer count is incremented by 1 (ST807). Next, reception states of all data of facsimile, e-mail, and IFAX mail are obtained from FAX and voice processing section 100 and IFAX processing section 400. Then, it is determined whether or not a change has occurred in the reception state (ST809). If the change has occurred in the reception state, applet 703 is notified of the changed reception state (ST810). Thereafter, the operation goes back to ST804. The reception notification includes sources (FAX, e-mail, IFAX etc.,) of reception data and sender information (mail address, FAX number, etc.).

While, in ST 806, if the message is received within one second, the timeout counter is reset (ST 811) to check whether or not the message is an arrive notification (ST 812). If the message is the arrive notification, the operation goes back to ST 804. On the other hand, if it is not the arrive notification, it is checked whether or not the message is an end notification (ST813). If the message is the end notification, processing is ended. If the message is not the end notification, processing goes back to ST804.

By each processing of ST805, ST808 to ST810, multi-function system 1 obtains the reception states of all data at one second interval, and notifies applet 703

of reception information if there is a change in the reception state. The reception states of all data of facsimile, e-mail, and IFAX mail are not necessarily obtained, and the reception state of at least one data may be obtained.

Also, by each step of ST804, ST806, and ST811, when the timeout counter reaches the same value as the timeout value after receiving the message from applet 703 finally, multi-function system 1 ends the monitor of the reception state.

Furthermore, in ST812, multi-function system 1 continues the connection when receiving the arrive notification from applet 703.

Multi-function system 1 performs the reception notification as mentioned above, and prints the content by printer 17.

Next, the following will explain each step of the operation of the applet, which is operated by PCs 3 to 5. FIG. 9 is a flowchart showing each step of the operation of the applet according to the above embodiment.

When browser module 702 of Java acceptable browser 701, which is executed by PCs 3 to 5, gains access to a boot-up WWW server started by multi-function system 1 and receives Homehtml 1535 and applet class file 536. Java acceptable browser 701 reads this applet class file 536, and executes applet 703. Applet 703 operates as

follows:

Applet 703 is set to be in a notification waiting state (ST901). Applet 703 determines whether or not notification is FAX reception notification when receiving notification (ST902). If the notification is FAX reception notification, it is determined whether or not a FAX reception notification flag is on (ST903). If the reception notification is on, applet 703 performs the display of reception notification (ST904). While, if the FAX reception notification flag is off, applet 703 does not perform the display of reception notification.

On the other hand, if the notification is not FAX reception notification in ST902, applet 703 determines whether or not notification is e-mail notification or I-FAX notification (ST905). If the notification is e-mail notification or I-FAX notification, applet 703 determines whether or not E-mail/I-FAX reception notification flag is on (ST906). If E-mail/I-FAX reception notification flag is on, applet 703 determines whether or not there is a sender's mail address in a notification permission sender list (ST907). Applet 703 recognizes the sender's mail address from the reception notification. If there is a sender's mail address therein, applet 703 performs the display of reception notification (ST908).

While, if E-mail/I-FAX reception notification flag

is off in ST906 and there is no sender's mail address in the list in ST907, applet 703 does not perform reception notification.

In ST906, if E-mail/I-FAX reception notification flag is on and nothing is set in the list in ST907, applet 703 performs reception notification.

In ST907, If there is a sender's mail address therein, applet 703 performs the display of reception notification, and If there is no sender's mail address therein, applet 703 does not performs the reception notification. However, applet 703 may perform the display of reception notification when there is no sender' mail address, while applet 703 may not perform the reception notification when there is sender' mail address.

Thereafter, applet 703 checks whether or not there is an instruction of applet end (ST909). If there is no end instruction, the operation goes back to ST901. If there is the end instruction, applet 703 transmits end notification to multi-function system 1 (ST911), and processing is ended. Applet 703 continues to transmit arrive notification to multi-function system 1 every 60 seconds during the operation.

As mentioned above, reception notification is displayed by PCs 3 to 5, and an operator can receive reception data printed by multi-function system 1.

Next, decision of reception notification

permission, which is performed by applet 703, will be specifically described as follows:

Java acceptable browser 701 comprises cookie processing section 704, which provides the so-called cookie function. Cookie processing section 704 creates character string information (Cookie) in which setting conditions are described in association with applet 703, and stores it to the file. This character string information includes a flag, which shows whether or not reception notification is executed, and a notification permission sender list, which includes mail address of sender, which permits reception notification.

Applet 703 determines whether or not reception notification is performed with reference to this character string information. More specifically, if the reception notification flag is on, applet 703 displays reception notification window 1000 as shown in FIG. 10 when receiving reception notification from multi-function system. If the reception notification flag is off, applet 703 does not display reception notification.

Also, applet 703 makes identification of the sender from reception notification received from multi-function system 1 and checks whether or not this sender is included in the notification permission sender list. Applet 703 displays the reception notification window when the reception notification flag is on and the sender is included in the notification permission sender list.

While, applet 703 does not display the reception notification window when the reception notification flag is on but the sender is not included in the notification permission sender list. Also, applet 703 displays the reception notification window when the reception notification flag is on and nothing is set in the notification permission sender list.

The reception notification flag included in the above-mentioned character string information can be rewritten from applet 703. Namely, applet 703 displays option setting window 1100 as shown in FIG. 11. Option setting window 1100 includes radio buttons 1101 and 1102 for selecting "presence" and "absence" of reception notification. The operator turns on either one of these radio buttons 1101 and 1102. If the radio button 1101 of "presence" is turned on, applet 703 turns on reception notification flag, and if the radio button 1102 of "absence" is turned on, applet 703 turns off reception notification flag.

Also, the notification permission sender list can be rewritten from applet 703. Namely, applet 703 displays option setting window 1200 as shown in FIG. 12. Applet 703 displays list editing area 1201 on option setting window 1200. For example, the operator inputs the mail address of the sender, which permits reception notification as shown in FIG. 12. This allows applet 703 to add the added mail address to the notification

permission sender list. This also makes it possible to delete the mail address from the notification permission sender list and to correct the mail address.

Since option setting windows 1100 and 1200 are provided in FAX, e-mail, and I-FAX, respectively, they can be differently set depending on FAX, e-mail, and I-FAX.

As explained above, according to multi-function system 1 of this embodiment, WWW server section 500 starts the WWW server so as to transfer HOMEhtml535 and applet class file 536 to Java acceptable browser 701 accessed to this WWW server. Java acceptable browser 701 executes applet 703 thereon. This applet 703 establishes a communication line between TCP/IP processing section 601 of multi-function system 1 and applet 703. Then, multi-function system 1 transmits reception notification to applet 703. Applet 703 receives this reception notification, and displays it on the display device of each of PCs 3 to 5.

Since applet 703 is transferred to PCs 3 to 5 from multi-function system 1, only Java acceptable browser 701 may be installed in PCs 3 to 5, and there is no need to install software dedicated to communications with multi-function system 1. This makes it possible to notify PCs 3 to 5 of reception of data at multi-function system 1 without installing software to PCs 3 to 5 when multi-function system 1 is newly connected to LAN 2. The

same can be applied to the case of exchanging multi-function system 1. This results in the considerable reduction of time and effort, which is necessary for setting and exchanging multi-function system 1.

Also, according to the aforementioned multi-function system 1, reception notification can be performed in real time. A communication line on LAN 2 is established between reception notification processing section 600 of multi-function system 1 and applet 703 executed on PCs 3 to 4, and reception notification is transmitted to applet 703 from reception notification processing section 600 through this communication line. This allows PCs 3 and 4 to be notified of data reception in substantially real time from multi-function system 1.

In contrast, for example, if reception notification is transmitted to the mail address of PC from the multi-function system by use of e-mail, e-mail including reception notification is once stored in the mail server. Therefore, reception notification is arrived to PC only after the mailer executed by PC gains access to the mail server. In contrast, according to the aforementioned embodiment, applet 703 always waits for reception notification from multi-function system 1. Then, applet 703 displays reception notification on the display device of PC speedily when receiving it.

Thus, in the case of using e-mail, reception

notification display time depends on not multi-function system 1 but PC. However, in case of the above-mentioned embodiment, reception notification display time depends on not PC but multi-function system 1. Namely, in the case of using e-mail, reception notification is a pull type, and in the case of the above-mentioned embodiment, reception notification is a push type. In common facsimile apparatuses, it is general that printing is carried out immediately after receiving facsimile data, and the operator knows the presence of data reception by looking at the printed data. The aforementioned embodiment can perform reception notification close to thus general facsimile apparatuses.

Also, according to multi-function system 1, applet 703 performs the presence or absence of reception notification and the management of notification permission for each sender. In the case of management performed by multi-function system 1, it is impossible to change the setting every client unless multi-function system 1 performs discrimination between clients. The application of multi-function system 1 is increased in scale and becomes complicated and a burden on multi-function system 1 is increased as the number of clients increases. According to the above-mentioned embodiment, the application of multi-function system 1 may be small in scale and simple, and the burden on multi-function system 1 can be reduced.

The present invention is not limited to the above-mentioned embodiment. The above embodiment explained the case using the multi-function system as an example. However, the present invention can be applied to a facsimile apparatus connected to a network, particularly IFAX. Namely, the present invention can be applied to the communication apparatus, which receives at least one of facsimile, e-mail and IFAX mail.

The scope of the present invention widely includes an image processing apparatus, an image forming apparatus, an image communication apparatus, an image scanning apparatus, etc. Specifically, the present invention includes a copy machine, a facsimile apparatus, a scanner section, a printer section, and an Internet facsimile apparatus. More specifically, in the case of the copy machine, the scanner and the printer section are mounted thereon. Also, in the case of the facsimile apparatus, the scanner, the printer section, and the facsimile communication section are mounted thereon. Moreover, in the case of the Internet facsimile apparatus, the scanner section and the printer section are mounted thereon, and the facsimile communication section is mounted thereon as required. In the case of the scanner and the printer, one section is of course mounted thereon. Also, the present invention includes an expansion board, which is used to add an Internet facsimile function to the existing copy machine, printer, facsimile apparatus,

scanner, etc. Moreover, the present invention includes an expansion board, which is used to add a general facsimile function to the existing copy machine, printer, scanner, etc.

This invention may be conveniently implemented using a conventional general purpose digital computer or microprocessor programmed according to the techniques of the present specification, as will be apparent to those skilled in the computer art. Appropriate software coding can readily be prepared by skilled programmers based on the techniques of the present disclosure, as will be apparent to those skilled in the software art. This invention may also be implemented by the preparation of application specific integrated circuits or by interconnecting an appropriate network of conventional component circuits, as will be readily apparent to those skilled in the art.

The present invention includes a computer program product which is a storage medium including instructions which can be used to program a computer to perform a process of the invention. The storage medium can include, but is not limited to, any type of disk including floppy disks, optical disks, CD-ROMs, and magneto-optical disks, ROMs, RAMs, EPROMs, EEPROMs, magnetic or optical cards, or any type of media suitable for storing electronic instructions.

The present invention is not limited to the above

described embodiments, and various variations and modifications may be possible without departing from the scope of the present invention.

This application is based on the Japanese Patent Application No.HEI11-223776 filed on August 6, 1999, entire content of which is expressly incorporated by reference herein.

What is claimed is:

1. A communication apparatus comprising:

a WWW server for publishing a hypertext, which has an applet embedded therein, to an outer terminal;

a communication section for communicating with said applet, which is executed by a browser on said outer terminal to which said hypertext is opened;

a receiving section for receiving information;

a printer for printing information received by said receiving section;

an arrival detecting section for detecting reception of information performed by said receiving section; and

a reception notification transmitting section for transmitting reception notification to said outer terminal by said communication section when said arrival detecting section detects the reception of information so that reception notification is performed at said outer terminal by said applet.

2. The apparatus according to claim 1, wherein said receiving section is a mail receiving section, which receives e-mail through a computer network.

3. The apparatus according to claim 1, wherein said receiving section is a facsimile receiving section, which receives image information through a telephone network.

4. The apparatus according to claim 1, wherein

said applet comprises setting information for setting reception notification to be valid or invalid, and reception notification is performed when said setting information is valid, and no reception notification is performed when said setting information is invalid.

5. The apparatus according to claim 1, wherein said applet comprises a list generate section for generating a list of senders of information of which reception notification should be performed, and a list editing section for editing said list, said applet performs reception notification when a sender included in said reception notification is present in said list, and said applet performs no reception notification when said sender is absent in said list.

6. The apparatus according to claim 1, wherein said applet comprises a list generate section for generating a list of senders of infromation of which reception notification should not be performed, and a list editing section for editing said list, said applet performs reception notification when a sender included in said reception notification is absent in said list, and said applet performs no reception notification when said sender is present in said list.

7. The apparatus according to claim 1, further comprising a reception list generating section for generating a reception list content file including a reception list showing information received by said

receiving section, wherein said applet requests said WWW server of transfer of said reception list content file so that said reception list content file is published to said outer terminal.

8. The apparatus according to claim 1, wherein said applet establishes a communication line between said communication section and said applet, and said reception notification transmitting section transmits said reception notification to said applet through said communication line.

9. A communication apparatus comprising a receiving section for receiving information from an outer section, a printer for automatically printing said information received by said receiving section, and a communication section for communicating with an outer terminal, wherein a hypertext, which has an applet embedded therein, is published to said outer terminal, reception notification is transmitted to said outer terminal by said communication section when said receiving section detects reception of information, and reception notification is performed at said outer terminal by said applet, which is executed by a browser on said outer terminal to which said hypertext is opened

10. A communication apparatus comprising:

an interface connected to a computer network;

a first receiving section for receiving an image through a telephone network using a facsimile

communication protocol;

a second receiving section for receiving image information through said computer network using an e-mail transfer protocol;

a WWW server for opening a hypertext, which has an applet embedded therein, to an outer terminal;

a communication section for communicating with said applet, which is executed by a browser on said outer terminal to which said hypertext is opened on said computer network;

a printer for printing information received by said first and second receiving sections;

a detector for detecting data reception performed by said first and second receiving sections; and

a notification processor for transmitting reception notification to said outer terminal by said communication section when said detector detects said reception of data so that reception notification is performed at said outer terminal by said applet.

11. A method for notifying reception in a communication apparatus, which receives information and prints received information, said method comprising:

opening a hypertext, which has an applet embedded therein, to an outer terminal;

establishing a communication line between said applet, which is executed by a browser on said outer terminal to which said hypertext is opened, and a

communication section;

detecting reception of information;

transmitting reception notification to said outer terminal through said communication line when reception of information is detected so that reception notification is performed at said outer terminal by said applet.

12. The method according to claim 11, wherein said information is received as an appended file of e-mail through a computer network.

13. The method according to claim 11, wherein said information is received as facsimile data through a telephone network.

14. The method according to claim 11, further comprising the step of changing validity or invalidity of reception notification at said outer terminal, wherein reception notification at said outer terminal is performed when said reception notification is valid.

15. The method according to claim 11, wherein reception notification at said outer terminal is performed when there is a sender, which has detected said reception, in a list of the senders of information of which reception notification should be performed.

16. The method according to claim 11, further comprising:

generating a reception list content file including a reception list showing received information; and

requesting said WWW server of transfer of said reception list content by said applet so that said reception list content is opened to said outer terminal.

ABSTRACT OF THE DISCLOSURE

A multi-function system starts a WWW server by use of a WWW server section. When Java acceptable browser gains access to the WWW server, the WWW server section transfers an applet class file to Java acceptable browser. An applet is executed on the Java acceptable browser. The applet establishes a communication line between a TCP/IP processing section of a reception notify processing section and the applet, and a reception notify transmitting section notifies the applet of reception notification. The applet displays reception notification on PC. This makes it possible to notify an outer terminal of data reception in substantially real time.

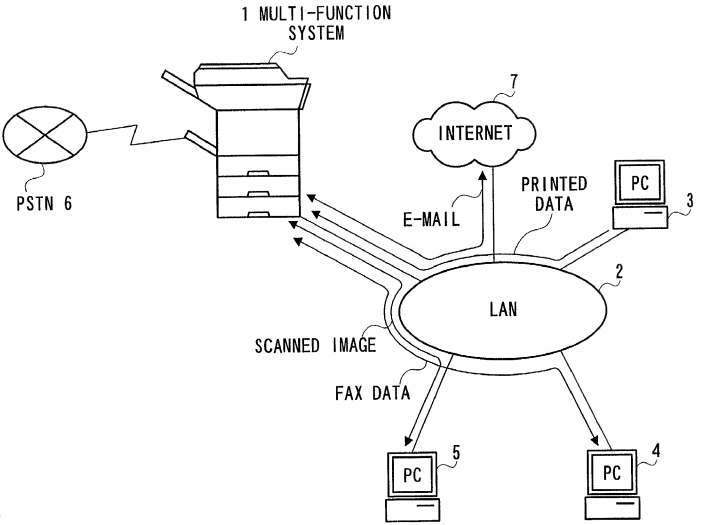

FIG. 1

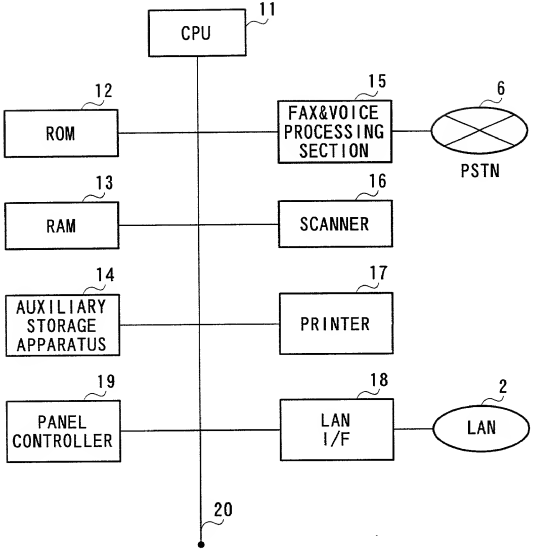
CPU
11
12
ROM
13
RAM
14
AUXILIARY STORAGE APPARATUS
19
PANEL CONTROLLER
15
FAX&VOICE PROCESSING SECTION
6
PSTN
16
SCANNER
17
PRINTER
18
LAN I/F
2
LAN
20

FIG. 2

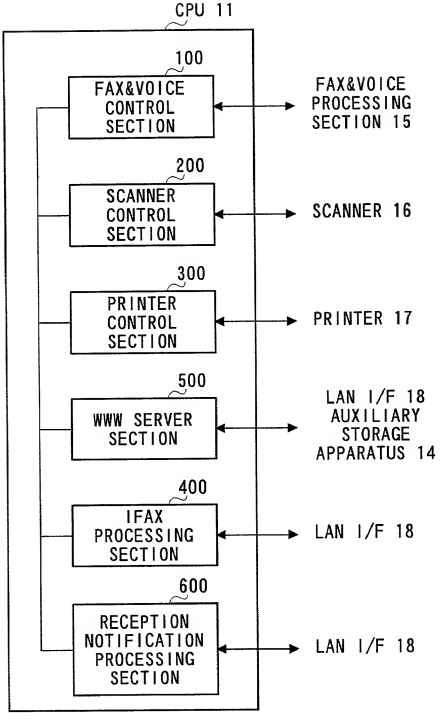
CPU 11
100
FAX&VOICE CONTROL SECTION
FAX&VOICE PROCESSING SECTION 15
200
SCANNER CONTROL SECTION
SCANNER 16
300
PRINTER CONTROL SECTION
PRINTER 17
500
WWW SERVER SECTION
LAN I/F 18
AUXILIARY STORAGE APPARATUS 14
400
IFAX PROCESSING SECTION
LAN I/F 18
600
RECEPTION NOTIFICATION PROCESSING SECTION
LAN I/F 18

FIG. 3

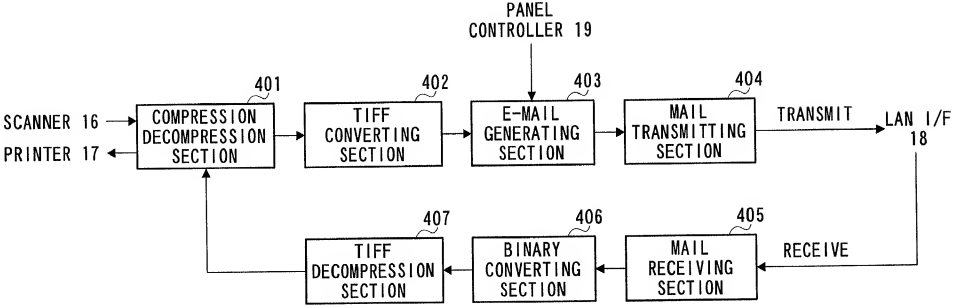

FIG. 4

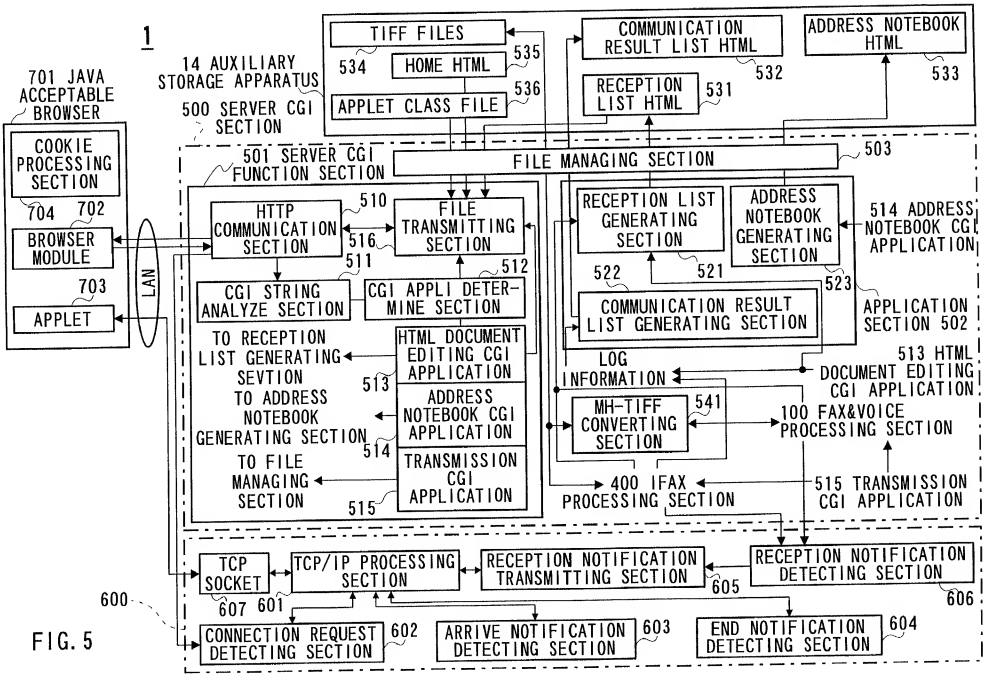
1
14 AUXILIARY STORAGE APPARATUS
500 SERVER CGI SECTION
TIFF FILES
534
HOME HTML
535
APPLET CLASS FILE
536
COMMUNICATION RESULT LIST HTML
532
RECEPTION LIST HTML
531
ADDRESS NOTEBOOK HTML
533
701 JAVA ACCEPTABLE BROWSER
COOKIE PROCESSING SECTION
704
702
BROWSER MODULE
703
APPLET
LAN
501 SERVER CGI FUNCTION SECTION
FILE MANAGING SECTION
503
HTTP COMMUNICATION SECTION
510
516
FILE TRANSMITTING SECTION
511
512
CGI STRING ANALYZE SECTION
CGI APPLI DETERMINE SECTION
TO RECEPTION LIST GENERATING SEVTION
TO ADDRESS NOTEBOOK GENERATING SECTION
TO FILE MANAGING SECTION
HTML DOCUMENT EDITING CGI APPLICATION
513
ADDRESS NOTEBOOK CGI APPLICATION
514
TRANSMISSION CGI APPLICATION
515
RECEPTION LIST GENERATING SECTION
522
521
ADDRESS NOTEBOOK GENERATING SECTION
523
514 ADDRESS NOTEBOOK CGI APPLICATION
COMMUNICATION RESULT LIST GENERATING SECTION
APPLICATION SECTION 502
LOG INFORMATION
513 HTML DOCUMENT EDITING CGI APPLICATION
MH-TIFF CONVERTING SECTION
541
100 FAX&VOICE PROCESSING SECTION
400 IFAX PROCESSING SECTION
515 TRANSMISSION CGI APPLICATION
600
TCP SOCKET
607
601
TCP/IP PROCESSING SECTION
RECEPTION NOTIFICATION TRANSMITTING SECTION
605
RECEPTION NOTIFICATION DETECTING SECTION
606
CONNECTION REQUEST DETECTING SECTION
602
ARRIVE NOTIFICATION DETECTING SECTION
603
END NOTIFICATION DETECTING SECTION
604

FIG. 5

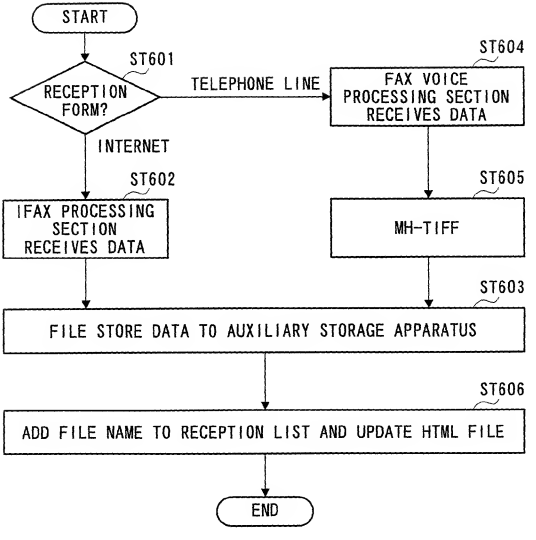
START
ST601
RECEPTION FORM?
TELEPHONE LINE
ST604
FAX VOICE PROCESSING SECTION RECEIVES DATA
INTERNET
ST602
IFAX PROCESSING SECTION RECEIVES DATA
ST605
MH-TIFF
ST603
FILE STORE DATA TO AUXILIARY STORAGE APPARATUS
ST606
ADD FILE NAME TO RECEPTION LIST AND UPDATE HTML FILE
END

FIG. 6

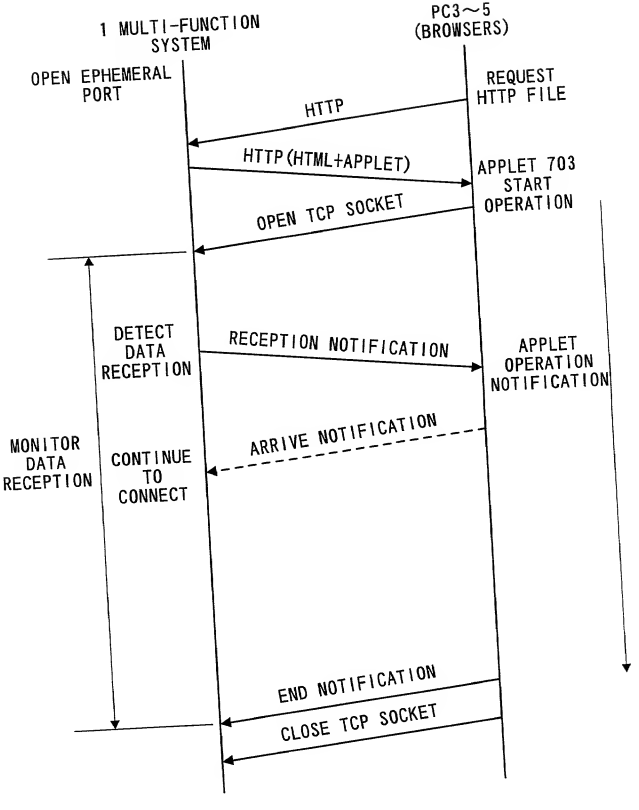
1 MULTI-FUNCTION SYSTEM
PC3～5 (BROWSERS)
OPEN EPHEMERAL PORT
REQUEST HTTP FILE
HTTP
HTTP(HTML+APPLET)
APPLET 703 START OPERATION
OPEN TCP SOCKET
DETECT DATA RECEPTION
RECEPTION NOTIFICATION
APPLET OPERATION NOTIFICATION
MONITOR DATA RECEPTION
CONTINUE TO CONNECT
ARRIVE NOTIFICATION
END NOTIFICATION
CLOSE TCP SOCKET

FIG. 7

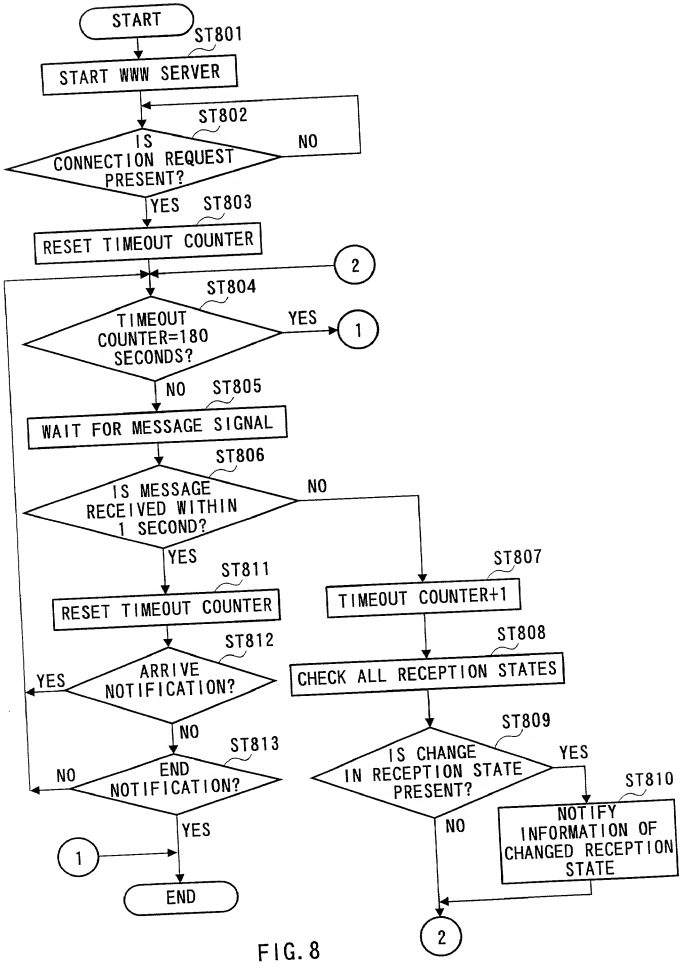
START
ST801
START WWW SERVER
ST802
IS CONNECTION REQUEST PRESENT?
NO
YES
ST803
RESET TIMEOUT COUNTER
2
ST804
TIMEOUT COUNTER=180 SECONDS?
YES
1
NO
ST805
WAIT FOR MESSAGE SIGNAL
ST806
IS MESSAGE RECEIVED WITHIN 1 SECOND?
NO
YES
ST811
RESET TIMEOUT COUNTER
ST812
ARRIVE NOTIFICATION?
YES
NO
ST813
END NOTIFICATION?
NO
YES
1
END
ST807
TIMEOUT COUNTER+1
ST808
CHECK ALL RECEPTION STATES
ST809
IS CHANGE IN RECEPTION STATE PRESENT?
YES
NO
ST810
NOTIFY INFORMATION OF CHANGED RECEPTION STATE
2

FIG. 8

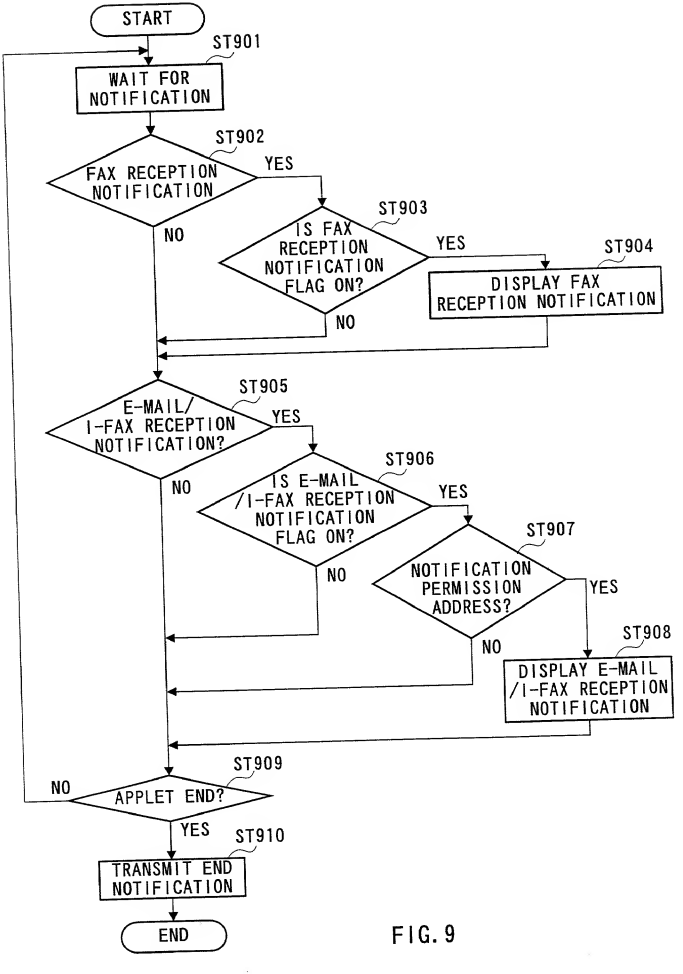
START
ST901
WAIT FOR NOTIFICATION
ST902
FAX RECEPTION NOTIFICATION
YES
NO
ST903
IS FAX RECEPTION NOTIFICATION FLAG ON?
YES
NO
ST904
DISPLAY FAX RECEPTION NOTIFICATION
ST905
E-MAIL/ I-FAX RECEPTION NOTIFICATION?
YES
NO
ST906
IS E-MAIL /I-FAX RECEPTION NOTIFICATION FLAG ON?
YES
NO
ST907
NOTIFICATION PERMISSION ADDRESS?
YES
NO
ST908
DISPLAY E-MAIL /I-FAX RECEPTION NOTIFICATION
ST909
APPLET END?
NO
YES
ST910
TRANSMIT END NOTIFICATION
END

FIG. 9

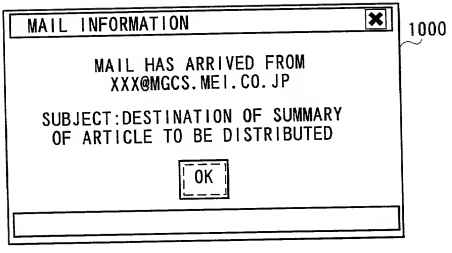
MAIL INFORMATION
1000
MAIL HAS ARRIVED FROM
XXX@MGCS.MEI.CO.JP
SUBJECT:DESTINATION OF SUMMARY
OF ARTICLE TO BE DISTRIBUTED
OK

FIG. 10

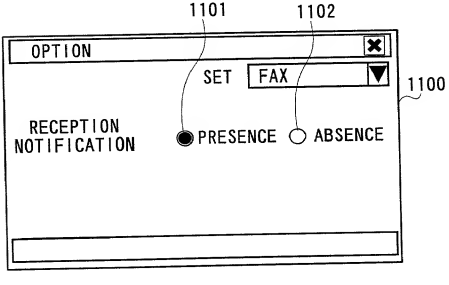
1101
1102
OPTION
SET
FAX
1100
RECEPTION
NOTIFICATION
PRESENCE
ABSENCE

FIG. 11

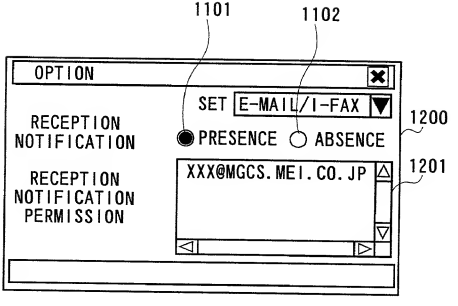
1101
1102
OPTION
SET E-MAIL/I-FAX
RECEPTION NOTIFICATION
PRESENCE
ABSENCE
1200
RECEPTION NOTIFICATION PERMISSION
XXX@MGCS.MEI.CO.JP
1201

FIG. 12

Declaration and Power of Attorney For Utility or Design Patent Application
特許出願宣言書

Japanese Language Declaration

私は、下欄に氏名を記載した発明者として、以下のとおり
宣言する:

私の住所、郵便の宛先および国籍は、下欄に氏名に続いて記載したとおりであり、

名称の発明に関し、請求の範囲に記載した特許を求める主題の本来の、最初にして唯一の発明者である(一人の氏名のみが下欄に記載されている場合)か、もしくは本来の、最初にして共同の発明者である(複数の氏名が下欄に記載されている場合)と信じ、

_____

_____

_____

その明細書を

(該当するほうに印を付す)

□ ここに添付する。

□ _____日に出願番号

第_____号として提出し、

_____日に補正した。

(該当する場合)

私は、前期のとおり補正した請求の範囲を含む前記明細書の内容を検討し理解したことを陳述する。

私は、連邦規則法典第37部第１章第56条に従い、本題の審査に所要の情報を開示すべき義務を有することを認める。

私は合衆国法典第35部第119条(a－d)項又は第365条(b)項に基づく、下記の外国特許出願又は発明者証出願、或いは第365条(a)項に基づく、少なくても米国以外の１ヶ国を指名したPCT国際出願の外国優先権利益を主張し、更に優先権の主張に係わる基礎出願の出願日前の出願日を有する外国特許出願、又は発明者証出願或いはPCT国際出願を以下に明記する:

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

COMMUNICATION APPARATUS AND RECEPTION
NOTIFYING METHOD

the specification of which

(check one)

■ is attached hereto.

□ was filed on _____ as

Application No. _____

and was amended on _____

(if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56.

I hereby claim foreign priority benefits under Title 35, United States Code §119(a-d) or §365(b) of any foreign application(s) for patent or inventor's certificate, or §365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the "No" box, any foreign application for patent or inventor's certificate, or of any PCT international application having a filing date before that of the application on which priority is claimed:

Prior foreign applications 先の外国出願			Priority claimed 優先権の主張	
JP11-223776	JAPAN	6/August/1999	■	□
(Number) (番号)	(Country) (国名)	(Day/Month/Year Filed) (出願の年月日)	Yes あり	No なし
			□	□
(Number) (番号)	(Country) (国名)	(Day/Month/Year Filed) (出願の年月日)	Yes あり	No なし
			□	□
(Number) (番号)	(Country) (国名)	(Day/Month/Year Filed) (出願の年月日)	Yes あり	No なし

Japanese Language Utility or Design Patent Application Declaration

☐ その他の外国特許出願番号は別紙の追補優先権欄にて記載する。

☐ Additional foreign application numbers are listed on a supplemental priority sheet attached hereto.

私は、合衆国法典第35部第119条(e)項に基づく、下記の合衆国仮特許出願の利益を主張する。

I hereby claim the benefit under Title 35, United States Code §119(e) of any United States provisional application(s) listed below.

(Number) (番号)	(Day/Month/Year Filed) 出願の年月日
(Number) (番号)	(Day/Month/Year Filed) 出願の年月日
(Number) (番号)	(Day/Month/Year Filed) 出願の年月日

☐ その他の合衆国仮特許出願番号は別紙の追補優先権欄にて記載する。

☐ Additional provisional application numbers are listed on a supplemental priority sheet attached hereto.

私は、合衆国法典第35部第120条に基づく下記の合衆国特許出願、又は第365条(c)項に基づく合衆国を指名したPCT国際出願の利益を主張し、本願の請求の範囲各項に記載の主題が合衆国法典第35部第112条第1項規定の態様で、先の合衆国特許出願又はPCT国際出願に開示されていない限度において、先の出願の出願日と本願の国内出願日又はPCT国際出願日の間に有効となった連邦規則法典第37部第1章第56条に記載の特許要件に所要の情報を開示すべき義務を有することを認める。

I hereby claim the benefit under Title 35, United States Code §120 of any United States application(s), or §365(c) of any PCT international application designating the United States of America, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT international application in the manner provided by the first paragraph of Title 35, United States Code §112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations §1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application.

(Application No.) (出願番号)	(Day/Month/Year Filed) (出願の年月日)	(現況) (特許済み、係属中、放棄済み)	(Status) (Patented, pending, abandoned)
(Application No.) (出願番号)	(Day/Month/Year Filed) (出願の年月日)	(現況) (特許済み、係属中、放棄済み)	(Status) (Patented, pending, abandoned)

☐ その他の合衆国又は国際特許出願番号は別紙の追補優先権欄にて記載する。

☐ Additional U.S. or international application numbers are listed on a supplemental priority sheet attached hereto.

私は、ここに自己の知識にもとずいて行った陳述がすべて真実であり、自己の有する情報および信ずるところに従って行った陳述が真実であると信じ、さらに故意に虚偽の陳述等を行った場合、合衆国法典第18部第1001条により、罰金もしくは禁錮に処せられるか、またはこれらの刑が併科され、またかかる故意による虚偽による陳述が本願ないし本願に対して付与される特許の有効性を損なうことがあることを認識して、以下の陳述を行ったことを宣言する。

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

私、下記署名者は、ここに記載の米国弁護士または代理人に本出願に関し特許商標庁にて取られるいかなる行為に関して、同米国弁護士又は代理人が、私に直接連絡なしに私の外国弁護士或るいは法人代表者からの指示を受け取り、それに従うようここに委任する。この指示を出す者が変更の場合には、ここに記載の米国弁護人又は代理人にその旨通知される。

The undersigned hereby authorizes the U.S. attorney or agent named herein to accept and follow instructions from either his foreign patent agent or corporate representative, if any, as to any action to be taken in the Patent and Trademark Office regarding this application without direct communication between the U.S. attorney or agent and the undersigned. In the event of a change in the persons from whom instructions may be taken, the U.S. attorney or agent named herein will be so notified by the undersigned.

Japanese Language Utility or Design Patent Application Declaration

委任状： 私は、下記発明者として、下記に明記された顧客番号を伴う以下の弁護士又は、代理人をここに選任し、本願の手続きを遂行すること並びにこれに関する一切の行為を特許商標庁に対して行うことを委任する。そして全ての通信はこの顧客番号宛に発送される。

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